

X-axis position and a Y-axis position are applied to analog-to-digital converters (A/D). In particular,

[i]n both embodiments position information is derived from a voltage taken from the potentiometers which is dependent on the force and position of pressure applied to the resistance element through disc 13 and which is read by analog to digital converters (A/D) attached to each resistance element and from a duration counter which is incremental on each iteration of the control loop during which the disc 13 has been held down.

Copper, col. 9, lns. 43-51; emphasis added.

As indicated by the underlined text above, the voltages from the potentiometers are read by the A/D converters.

It is noted that the range of voltage levels are broken into three ranges. In particular,

[v]oltages between 0 and a voltage somewhat below one-half of maximum represent movement in the negative direction of the corresponding axis. Voltages between a voltage somewhat greater than one-half of maximum and approximately the maximum represent movement in the positive direction of the corresponding axis. The band between the two ranges or neutral band assures that low-level noise inherent in the A/D converters does not result in the generation of spurious position data while the disc is in its neutral position.

Copper, col. 9, ln. 61 to col. 10, ln. 5; emphasis added.

As emphasized above, the voltage in the neutral range is disregarded to avoid low-level noise inherent in the A/D converters. Indeed, as stated in Copper,

[i]f the current value from an A/D channel lies within the neutral band, the duration counter and the unit count are both reset to zero.

Copper, col. 10, lns. 13-15, emphasis added.

In other words, the analog voltages from the potentiometers of Copper are directly applied to the A/D converters

since the value of the A/D channel is checked against the neutral band.

Indeed, as described in *Copper*, the digital values from the A/D converters are compared against "bands" of voltages. In particular,

[t]o obtain baseline position data or unit count, voltages outside the neutral band are divided into several bands which correspond to ranges of applied forces. Bands closer to the neutral band correspond to lower applied forces. Each band has an associated unit count; for computational efficiency counts for adjacent bands differ by factors of 2. If the current value from an A/D channel lies within the neutral band, the duration counter and the unit count are both reset to zero.

Copper, col. 10, lns. 7-15, emphasis added.

Applicants respectfully submit that *Copper* describes an apparatus in which a voltage from a potentiometer is directly applied to an A/D converter for conversion from an analog signal to a digital signal. The value of this digital signal is then compared to several voltage bands.

In contrast to the apparatus of *Copper*, Applicants' claimed invention is directed to a "level segmenting" unit that generates a plurality of levels of the analog signal, where the plurality of levels are within a range set by a "segmenting-range setting" unit. In other words, the "segmenting-range setting" unit *initially sets the range within which the output level of the analog signal is to be segmented.* This requirement is found in Applicants' independent claims 1 and 4. A similar requirement is found in Applicants' claim 16 with respect to the storing and segmenting steps. (Also see Applicants' specification, pp. 3, lns. 17-20; pp. 16, lns. 9-17; pp. 17, lns. 5-7; pp. 18, ln. 27 to pg. 19, ln. 3; pp. 19, lns. 21-23; and pp. 37, lns. 9-13.)

In view of the above, Applicants respectfully submit that Applicants' invention as required by independent claims 1, 4 and 16 is patentable over *Copper*.

First, nowhere does *Copper* describe or suggest Applicants' claimed "level segmenting unit for segmenting the analog signal output by said detecting device into one of a plurality of levels."

As noted above, the analog voltage from a potentiometer of *Copper* is directly applied to an A/D channel. There is no "level segmenting" unit. Further, as noted above, the "bands" of voltages described in *Copper* relate to the A/D channel - not the analog voltage of the potentiometer.

Second, nowhere does *Copper* describe or suggest Applicants' claimed "segmenting-range setting unit for setting a range of output levels of the analog signal, wherein the plurality of levels into which the analog signal is segmented are within the range which is set by said segmenting-range setting unit." As the underlined text indicates, the segmenting-range setting unit sets the range of output levels of the analog signal - which determines the plurality of levels provided by Applicants' claimed level-segmenting unit.

As noted above, although *Copper* describes voltage bands relating to ranges of applied forces - the output signals from the A/D converters - i.e., the digital values - are compared against these voltage bands - not values of the analog signals.

Consequently, if *Copper* does not describe or suggest these elements of Applicants' claims - Applicants respectfully do not understand how it is now "obvious" to add both a "level-segmenting unit" for segmenting the analog signal output, and a "segmenting-range setting unit" for setting a range of output levels, as claimed by Applicants.

Applicants do note that the Examiner asserts that it

would have been obvious to one having ordinary skill in the art at the time of the invention for a device similar to that which is taught by [Copper] to include a level segmenting unit and a segmenting-range setting unit for providing a set range of voltage levels which relate to applied pressure to a detecting device in or to provide the corresponding signals to a processor for controlling a computer system. This thereby providing intermediate levels between the maximum and minimum voltage to control the displayed object for interaction between the user and the system.

Emphasis added.

However, Applicants respectfully submit the Examiner's assertion fails for a number of reasons.

First, the Examiner's stated motivation *is without support*. The Examiner has not pointed to any prior art providing the motivation required to modify the apparatus of *Copper* as suggested by the Examiner. In fact, *Copper* already provides a system for controlling the displayed object for interaction between the user and the system. (*Copper*, col. 10, lns. 47-51.) As such, Applicants respectfully submit there is no reason to modify the apparatus described in *Copper* as asserted by the Examiner.

Second, the Examiner's stated reason does not address the segmenting-range setting unit. Both modifications need to be made. The Examiner's stated reason for modifying the apparatus of *Copper* only relates to providing intermediate levels. Therefore, even if the Examiner's motivation were correct - the Examiner has not stated how this motivation leads to both a "level-segmenting" unit and a "segmenting-range setting" unit as claimed by Applicants.

Similar distinguishing requirements are found in Applicants' independent claim 16. For example, nowhere does *Copper* describe or suggest Applicants' required steps of:

storing an output level of a resultant analog
signal output by the detecting device in a

storing unit which is built in or connected to the entertainment device; and segmenting, by the level segmenting unit, the resultant analog signal output by the detecting device into a plurality of levels on the basis of the output level stored in the storing unit.

Emphasis added.

As a result, Applicants respectfully submit that independent claims 1, 4 and 16 are patentable over *Copper*. As such, dependent claims 3, 6-9, 14 and 17 are also patentable over *Copper*.

Claims 2, 5, 10-13 and 15 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Copper* in view of U.S. Patent No. 6,208,271 issued March 27, 2001 to Armstrong. Applicants respectfully traverse for the reasons described above with respect to independent claim 1.

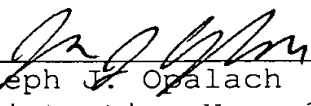
Applicants have briefly reviewed the remaining prior art references made of record in the Official Action, but not relied upon, and believe them to be no more pertinent to the present invention than discussed in the present Official Action.

As it is believed that all of the rejections set forth in the Official Action have been fully met, favorable reconsideration and allowance are earnestly solicited. If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that the Examiner telephone Applicants' attorney at (908) 654-5000 in order to overcome any additional objections that the Examiner might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

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Respectfully submitted,

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